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PUBLIC HEALTH REPORTS.

Preliminary report on sanitary condition of Colon and Panama, and the Isthmus between these points.

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COLON.

General description.—The town of Colon, while not the most populous, is probably the most important seaport on the Isthmus of Panama. It is built on the island of Manzanilla, and is situated on the bay of Limon. The island on which the town is built lies close to the mainland and is connected with it by the dam of the Panama Railroad. The town was established on this island in 1850 and given the name of Colon. This was the official name, but it was also known as Aspinwall after the name of one of its founders. The island was leased by the Government to the Panama Railroad Company for a period of ninety-nine years, and the entire business portion of the city is built on lots sublet by the company to individual persons for a term not to exceed ten years.

The island on which Colon is situated is 1 by $1\frac{1}{2}$ miles in extent and is of coral formation, and, being such, is higher at the margins and lower in the center. It is only a few feet above the sea level and may be divided into two portions: (1) That occupied by the buildings of the Panama Railroad Company and the canal company. This comprises a narrow strip along the shores of the bay and has been filled in, so that this section is dry. This comprises about one-sixth of the extent. (2) The remainder of the island, a portion of which is occupied by the town proper, excepting the buildings of the railroad and canal companies, is low and swampy, the houses, in fact, being built in a swamp that is covered with water during the rainy season. The streets are macadamized and in fair condition and are higher than the lots on which the houses are built. Water stands in a stagnant pool under two-thirds of the houses during the rainy season, and even now, during the dry season, numerous pools have been noted.

The unoccupied portion of the island, by far the larger, remains to-day a primitive swamp covered with dense tropical vegetation and stagnant water, furnishing admirable breeding places for millions of mosquitoes.

The swampy area is not confined to the island on which Colon is situated, but extends back of the town on the mainland for a distance of 15 miles, this swamp being from 3 to 5 miles wide.

The town was destroyed by fire during the revolution of 1885, and most of the existing buildings have been constructed since that time. The houses are of wood and, with the exception of the buildings owned

by the Panama Railroad and Canal Company, are provided with sanitary arrangements of the most primitive kind.

In fact in this connection the town can be divided into three sections:

(1) That occupied by the Panama Railroad Company. This part is clean, dry, and is equipped with a modern sewerage system. This section is clean, and is kept so by proper sanitary supervision. The grounds are continually inspected, and no stagnant pools of water to serve as breeding places for mosquitoes are allowed to exist. Their water tanks are either screened or oiled, so that few mosquitoes exist in their section, although during the land breeze this region is infested by mosquitoes blown from the adjacent insanitary section of the city and swamps.

(2) That owned and occupied by the buildings of the Panama Canal Company. There houses are also of wood, but substantial structures, built on made land fronting on the bay. This section is dry and a sewerage system has been installed; but the latter is not modern, and is defective from a sanitary standpoint. There is no sanitary policing of the grounds, and uncovered water barrels and small pools, broken bottles, etc., furnish numerous breeding places for mosquitoes.

(3) The third section of the city embraces the remaining portion not already specified, and contains the stores and residences of the greater portion of the inhabitants. Excepting the street facing the water, which is the principal business one, the houses in this section are built on low ground, in the majority of cases over the swamp, and contain practically no sanitary arrangements—common privies, or none at all, with simple deposition of fecal matter and other excrementitious material on the ground to be removed by the washing of the rains. These habitations are filthy in the extreme, and it is difficult to understand how people can live in such insanitary surroundings with any semblance of health. Probably the whites could not, but the negroes who occupy this section do not seem to suffer to an appreciable extent.

Population.—The estimated population of Colon is 6,000, of which 75 per cent consists of Jamaica and other negroes, a few Chinese, about 300 whites, and the remainder natives.

Climate.—Colon being situated in latitude 9° north has a tropical climate, and while the heat in the shade is not intense, it is constant, with little variation, during the year, and this, with the high degree of humidity, makes it very enervating.

Two seasons exist: (1) The dry, which embraces the months of January, February, March, and April; (2) the wet, which lasts during the remaining eight months.

During the dry season there is only about 8 inches of rainfall, and the town is swept by the northeast trade winds, which moderate the heat and make it more comfortable, especially on the beach. The mean temperature during the dry season is about 85° F. to 90° F., and the humidity of the air is 77 per cent. The nights are cooler during this period, and one must be careful to protect against chilling the body. However, the temperature in the sun is much higher, being approximately 140° F. The temperature during the rainy season is about 85° F. in the shade during the day, with little variation at night. The humidity varies from 86 per cent to near the point of saturation. The rainfall is abundant, and occurs almost every day, being about 125

inches, so that the annual rainfall of Colon is approximately 133 to 140 inches, about 50 inches more than the mean for the Isthmus between Colon and Panama, and twice that of the city of Panama. For more accurate and comprehensive data relative to temperature, humidity, and rainfall, see Professor Abbot's report in *Review of Weather*, March, 1903.

Water supply.—The water supply of Colon is derived from two sources: (1) Rain water, collected in cisterns (above ground) and barrels. This forms the principal supply of drinking water, but during the dry season is inadequate, and the negroes and natives buy the water that the railroad company supplies from its reservoir on Monkey Hill. This supply is not wholesome, in my opinion. I visited the reservoir on the hill 2 miles distant from Colon, and examination shows it to be a shallow pond of stagnant water containing much matter in suspension. A row of houses, eight in number, is situated on the brink of this reservoir, in some instances not more than 30 feet distant, the ground sloping from the house to the reservoir, so that the rains can not fail to wash all excrementitious material into the reservoir. All the houses are occupied by negro families and are in the usual filthy condition of such habitations. The negroes also wash their clothes and other laundry in this water. I know this to be a fact, because I saw them doing it.

The white population and better class of natives usually have a sufficient quantity of rain water for drinking purposes, and the railroad company supplies distilled water for the use of its employees. The negroes have to depend upon the Monkey Hill water that is piped into the city by a 4-inch main and sold for about 1 cent gold per gallon.

None of the rain barrels and tanks or cisterns are covered or in any way protected to prevent the breeding of mosquitoes, except those on the property of the railroad company—such protective measures have already been described—therefore, even excepting the swamp, the additional breeding places for mosquitoes are legion.

Sewer system.—As already mentioned, two small sewers have been installed—one on the property of the Panama Railroad Company, which is modern and in good condition, the other on the Panama Canal Company property that is faulty and imperfect. These sewers dispose of only a small proportion of the excrement, and in the greater portion of the town the fecal matter is simply deposited on the ground to be washed away by the rains.

Disposal of kitchen and other refuse.—The disposal of the refuse specified above is extremely crude and imperfect. A few carts are hired by the municipal authorities for one or two hours during the morning and afternoon to cart away such refuse, but the system is elementary and imperfect, and much is left to the benevolent buzzard and stray dog.

Markets.—A general city market exists where fresh produce and meats are sold. Most of the venders are natives, a few negroes and Chinese. Sanitary principles are generally ignored and unclean conditions exist. There is no official inspection of meat or other articles offered for sale, and few, if any, precautions as to cleanliness are observed.

Ice factory.—An ice factory owned and operated by the railroad company furnishes a good quality of ice, distilled water being used for this purpose.

Hospitals.—There are two hospitals in Colon, one belonging to the Panama Railroad Company and the other to the Panama Canal Company. They are both situated on the water front and are removed from the town. That belonging to the railroad company is a two-story building in good repair, having a capacity of 35 beds. This is under the management of the company's surgeon, a competent medical officer, fully conversant with tropical diseases. The beds are provided with mosquito bars, and the patients suffering from malarial fevers are screened.

The other hospital, that belonging to the canal company, is in a bad state of preservation and badly in need of repairs. It is poorly furnished, and little attention is paid to screening patients suffering from malarial fever. It is under the control of the French Sisters of Charity. It has a capacity of 50 beds. There is no asylum in Colon.

Vital statistics.—As in most Spanish towns, the vital statistics are kept by the alcalde, and in Colon are woefully unreliable, inaccurate, and worthless as indicative of the disease from which the person died. In fact nearly all are classed as "fever;" no mention of the variety. Other diagnoses entered on the official list are "colic," "attack," and natural causes. No attention has as yet been paid to the recent law requiring the report of contagious diseases or "those diseases that can give cause to an epidemic."

During January, 1904, there were from all causes 24 deaths.

Prevailing diseases.—The most common and fatal disease in Colon is malarial fever, especially the pernicious forms. This disease exists throughout the year, but is more prevalent and severe during the rainy season. All types of malarial fever are more frequent in Colon than Panama, and the pernicious forms more prevalent. The records of the Panama railroad hospital show that one-fourth of all deaths among the patients of that institution have been due to malarial fevers.

Beriberi is a common disease in Colon, as elsewhere on the Isthmus; dysentery is common, and tuberculosis and rheumatism are always present. Yellow fever occurs in Colon, although the authorities try to persuade themselves that it is imported from Panama. Cases occur every summer, and as the *stegomyia* are everywhere present it only needs a lot of nonimmune material to show a marked increase in the number of the cases. Five cases, three of them fatal, occurred last year among the better class of the white population. However, yellow fever does not occur as frequently in Colon as in Panama, and at present no cases are known to exist in the town.

Mosquitoes.—Both *Stegomyia fasciata* and *Anopheles* are well distributed through the native section of the city; very few, indeed, are present along the ocean front on the property of the Panama Railroad Company. This latter is due to the sanitary policing of these grounds to prevent breeding places. However, mosquitoes are few now in comparison to the number during the rainy season, when they are said to exist in swarms and are much more numerous than in Panama. *Aedes* and several varieties of *Culex* are also present.

Harbor.—There is no harbor at Colon worthy of the name. It is one-half mile long and 3 miles wide at entrance; is open to the sea, unprotected and at times very rough. It sometimes becomes quite rough when there is a strong breeze from the north, and ships are obliged to

leave the docks and harbor and put to sea, at times having to remain out for two or three days.

It is not a safe anchorage for a floating disinfection plant, and there is no place on the shores suitable for the location of a quarantine station.

There are three docks at which vessels drawing 25 feet of water can lay and load or discharge cargo. In fact, all work of this nature is done at the wharves.

The only place near Colon that would be suitable for quarantine purposes is that of Portobello. This lies 18 miles to the northeast of Colon, and is a protected harbor. This bay is 2 miles long and 3 miles wide, being three-quarters of a mile wide at the entrance. The bottom is mud, forming an excellent anchorage in 10 to 17 fathoms of water well up in the bay. There is only a small village on the shore of the bay, and there is no regular communication with Portobello from Colon.

I have not yet had an opportunity of visiting this place on account of lack of communication, and the data given has been obtained from ship captains who are familiar with the place.

Commerce.—There is more commerce at Colon than any other port in the Republic of Panama, and with the advent of work on the canal is bound to materially increase. The following lines of steamers now communicate with Colon:

La Veloce, Italian, monthly sailing.

Spanish Mail (Compañía Sud America de Vapores), monthly sailing between Colon and Barcelona, via Porto Rico and sometimes Cuba. The ships of this line sail from Barcelona to ports in Colombia, then to Colon and Porto Rico on the homeward journey.

Leyland Line, weekly sailing from Colon to Liverpool via New Orleans.

Royal Mail Steam Packet Company, from England to Colon and Colombian ports via Kingston, Jamaica.

Hamburg-American, monthly sailing between Colon and Hamburg.
Compagnie General Transatlantique, Colon to Havre.

Austro-American, monthly sailing, via Porto Rico on homeward voyage.

Panama Railroad and Steamship Company, weekly sailing, Colon to New York direct.

There are also two steam schooners that make weekly sailings between Bocas del Toro and Colon.

Quarantine.—The quarantine as at present enforced by the local authorities is certainly of a rudimentary character, a so-called inspection after the vessel docks being the quarantine procedure in vogue at this port. The doctor, a native Panaman, comes on board and apparently asks a few questions, and the vessel is given pratique. I did not see him muster or inspect the crew or steerage passengers. There are no facilities of any nature for treating an infected vessel, and if one should arrive I do not know what the local authorities would do.

General considerations.—Can Colon be made a healthy port; and if so, how?

The climate of Colon is decidedly enervating, and the railroad company grants its white employees two months leave of absence a year. The negroes do not seem to suffer to an appreciable extent. Taking

into consideration the insanitary surroundings that prevail, one is impressed with the fact that if a person enjoys fair health under such conditions, with proper sanitary surroundings from improved sanitation he should experience little impairment of health in this climate, provided proper care is taken and an opportunity to recuperate in a northern climate is possible.

The question now naturally arises, Can Colon be made a healthy town? I think this can be answered in the affirmative—that is, a healthy tropical city. The task is a large one and is an engineering problem. Briefly mentioned, it means filling in the entire island on which the town is built, the installation of a good supply of water (I have been told this can be secured from Santa Keta, 11 miles distant) and sewerage system, the destruction of the greater number of the buildings now occupied by the negro population, and the construction of new houses on sanitary principles, and the enforcement of sanitary regulations.

The measures outlined above would remove the swamp immediately around the town, the cisterns and water barrels, and the breeding places of the mosquitoes most dangerous to a community.

PANAMA.

Relative to the sanitary history of the city of Panama, I refer to the report of Asst. Surg. C. C. Pierce, which is complete and gives an accurate description of the existing conditions in that city.

The improvement of Panama and making it a healthy tropical city is the installation of a good water supply and modern sewerage system, thereby removing breeding places for mosquitoes, etc.

A good supply of water can be obtained from the Juan Diaz River, 12 miles distant.

Another fact of importance is the hospital belonging to the canal company. This becomes the property of the United States by purchase, and forms an admirable base hospital, well located and of sufficient grounds to allow of the construction of any number of additional pavilions that may become necessary if the present capacity of 700 beds should not prove ample.

THE ISTHMUS.

Under the above heading is meant the strip along the railroad and the proposed canal between Colon and Panama.

This is about 47 miles long, and a number of villages are scattered along the line of the railroad. There are 18 stations on the road, and the estimated population of these villages is 15,000.

The inhabitants are almost exclusively negroes and Chinese. All the villages are extremely filthy, with no sanitary regulations or restrictions, no sewers or water supply except that furnished by rain water or small springs or streams. The fecal matter is simply deposited on the ground in the streets, or the most convenient spots, to be removed by the rains, buzzards, or hogs. Refuse of all kinds accumulates or is dumped into the streets to await removal by the elements of nature or the scavengers mentioned above.

Mosquitoes are plentiful, and breeding places exist in abundance, and malarial fevers exist in all types. Tuberculosis, rheumatism, and beriberi are common, and smallpox and yellow fever will prevail

whenever favorable clinical material exists and the infection is introduced.

The route of the proposed canal is swampy for 8 miles on the Colon end and for 5 miles on the Panama end, and several smaller areas of this character exist between these points.

However, a number of excellent sites exist for camps in the hills, and the canal company have located most of their camps in such localities.

There are 2,600 houses belonging to the canal company that are in a fair state of preservation and can be available for use after only minor repairs. It is estimated that they had accommodation for 15,000 people, and their camps at Bas Obispo, Culebra, and Empire are certainly well located. All their camps are so located as to be easily drained, and with the elimination of adjacent breeding places for mosquitoes, the installation of a proper water supply, and a system for the disposal of excreta and other refuse the health of the occupants should remain good.

The camp at Culebra will probably remain the most important, because at this point the men would be near 90 per cent of the work on the canal.

The camps already established can serve as nuclei for any additional accommodations that may become necessary on account of an increase in the number of laborers.

The climate where the camps are located is far superior to that of Colon or Panama, and with proper sanitary regulations by which they are maintained as sanitary units the health of the occupants should remain good.

Received February 27, 1904.

Officers of the Service stationed in foreign ports requested by Panama to act for that country in the same manner as for the United States.

DEPARTMENT OF STATE,
Washington, February 24, 1904.

SIR: I have the honor to inclose for your consideration copy of a note from the minister of Panama at this capital, in which he suggests that United States medical officers at contaminated ports in foreign countries may be instructed to act in regard to vessels sailing for ports of Panama as they do in regard to vessels sailing for United States ports.

Awaiting your reply, I have the honor to be, sir, your obedient servant,

JOHN HAY.

The SECRETARY OF THE TREASURY.

[Inclosure.]

LEGATION OF THE REPUBLIC OF PANAMA,
Washington, D. C., February 20, 1904.

SIR: The Bureau of Public Health and Marine-Hospital Service details in foreign ports, which are under the suspicion of contagious diseases, medical officers to assist the consuls of the United States, in order to prevent the transportation of diseases from said ports to ports of the United States by ships bound for them.

In view of the importance of the sanitary precautions for the great work that is going to be accomplished by the United States on the territory of the Republic of Panama, I beg to suggest to your excellency that orders be given to the medical officers detailed at the contaminated ports to exercise their authority and to dictate